What is claimed is:

1. A method of manufacturing a magnetoresistive device comprising:

a magnetoresistive element having two surfaces that face toward opposite directions and two side portions that face toward opposite directions, and incorporating a plurality of layers including a conductive protection layer located uppermost;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for magnetic signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one of surfaces of each of the bias field applying layers and overlapping one of the surfaces of the magnetoresistive element; the method comprising the steps of:

forming the magnetoresistive element;

forming the two bias field applying layers;

forming two nonconductive layers in two regions that include ends of the magnetoresistive element near the side portions thereof and that are parts of the one of the surfaces of the magnetoresistive element; and

forming the two electrode layers such that each of the electrode layers has an area greater than that of each of the nonconductive layers and is located in the one of the surfaces of the magnetoresistive element, wherein:

the step of forming the magnetoresistive element includes the step of forming an oxide layer by oxidizing part of a top surface of the protection layer,

in the step of forming the bias field applying layers, the bias field applying layers are formed such that parts thereof are laid over the oxide layer, and

in the step of forming the nonconductive layers, the oxide layer is removed by etching except for portions thereof to be the nonconductive layers, the portions remaining because of the parts of the bias field applying layers laid over the oxide layer.

2. The method according to claim 1 wherein:

the magnetoresistive element is formed to incorporate: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the soft magnetic layer is located closer to the one of the surfaces of the magnetoresistive element than the antiferromagnetic layer.

3. The method according to claim 2 wherein each of the bias field applying layers is formed to incorporate a first layer made of a ferromagnetic substance and a second layer made of an antiferromagnetic substance wherein the first layer is located on a side of the nonmagnetic layer, the pinned layer and the soft magnetic layer, and the second layer is located between the first layer and each of the electrode layers.

4. The method according to claim 3 wherein the antiferromagnetic layer is formed to have an area greater than that of each of the pinned layer, the nonmagnetic layer and the soft magnetic layer, and each of the bias field applying layers is located between the antiferromagnetic layer and each of the electrode layers.

5. The method according to claim 2 wherein the protection layer is located between the soft magnetic layer and the electrode layers,

the method further comprising the step of forming a high resistance layer through increasing the resistance of at least a part of the protection layer located in a region between the two electrode layers.

6. A method of manufacturing a thin-film magnetic head comprising a magnetoresistive device that is a device for reading a magnetic signal, the magnetoresistive device comprising:

a magnetoresistive element having two surfaces that face toward opposite directions and two side portions that face toward opposite directions, and incorporating a plurality of layers including a conductive protection layer located uppermost;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for magnetic signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one of surfaces of each of the bias field applying layers and overlapping one of the surfaces of the magnetoresistive element; the method comprising the steps of:

forming the magnetoresistive element;

forming the two bias field applying layers;

forming two nonconductive layers in two regions that include ends of the magnetoresistive element near the side portions thereof and that are parts of the one of the surfaces of the magnetoresistive element; and

forming the two electrode layers such that each of the electrode layers has an area greater than that of each of the nonconductive layers and is located in the one of the surfaces of the magnetoresistive element, wherein:

the step of forming the magnetoresistive element includes the step of forming an oxide layer by oxidizing part of a top surface of the protection layer,

in the step of forming the bias field applying layers, the bias field applying layers are formed such that parts thereof are laid over the oxide layer, and

in the step of forming the nonconductive layers, the oxide layer is removed by etching except for portions thereof to be the nonconductive layers, the portions remaining because of the parts of the bias field applying layers laid over the oxide layer.

7. The method according to claim 6 wherein:

the magnetoresistive element is formed to incorporate: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the soft magnetic layer is located closer to the one of the surfaces of the magnetoresistive element than the antiferromagnetic layer.

8. The method according to claim 7 wherein each of the bias field applying layers is formed to incorporate a first layer made of a ferromagnetic substance and a second layer made of an antiferromagnetic substance wherein the first layer is located on a side of the nonmagnetic layer, the pinned layer and the soft magnetic layer, and the second layer is located between the first layer and each of the electrode layers.

9. The method according to claim 8 wherein the antiferromagnetic layer is formed to have an area greater than that of each of the pinned layer, the nonmagnetic layer and the soft magnetic layer, and each of the bias field applying layers is located between the antiferromagnetic layer and each of the electrode layers.

10. The method according to claim 7 wherein the protection layer is located between the soft magnetic layer and the electrode layers,

the method further comprising the step of forming a high resistance layer through increasing the resistance of at least a part of the protection layer located in a region between the two electrode layers.